

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 15 February 2001 (15.02.01)	
International application No. PCT/IB99/01213	Applicant's or agent's file reference B0188
International filing date (day/month/year) 04 June 1999 (04.06.99)	Priority date (day/month/year)
Applicant DELPUCH, Alain	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:03 January 2001 (03.01.01)☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WFO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Pascal Piriou Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

FREEMAN, Jacquelin, C.
W.P. Thomson
Celcon House
289-293 High Holborn
London WC1 V 7HU
ROYAUME-UNIDate of mailing (day/month/year)
24 January 2001 (24.01.01)Applicant's or agent's file reference
B0188

IMPORTANT NOTIFICATION

International application No.
PCT/IB99/01213International filing date (day/month/year)
04 June 1999 (04.06.99)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

Name and Address

BENECH, Frédéric
69, avenue Victor Hugo
F-75783 Paris Cedex 16
France

State of Nationality

State of Residence

Telephone No.

0144 1736 60

Facsimile No.

0140 6791 40

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

FREEMAN, Jacquelin, C.
W.P. Thompson & Co.
Celcon House
289-293 High Holborn
London WC1 V 7HU
United Kingdom

State of Nationality

State of Residence

Telephone No.

44 20 7242 3524

Facsimile No.

44 20 7504 6607

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☒ the designated Offices concerned
☐ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

R. Raissi

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

FREEMAN, Jacquelin, C.
W.P. Thomson
Celcon House
289-293 High Holborn
London WC1 V 7HU
ROYAUME-UNI

Date of mailing (day/month/year) 11 January 2001 (11.01.01)	
Applicant's or agent's file reference B0188	IMPORTANT NOTIFICATION
International application No. PCT/IB99/01213	International filing date (day/month/year) 04 June 1999 (04.06.99)

1. The following indications appeared on record concerning:		
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input checked="" type="checkbox"/> the agent
<input type="checkbox"/> the common representative		
Name and Address BENECH, Frédéric 69, avenue Victor Hugo F-75783 Paris Cedex 16 France	State of Nationality	State of Residence
	Telephone No. 0144 1736 60	
	Facsimile No. 0140 6791 40	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input checked="" type="checkbox"/> the person	<input type="checkbox"/> the name	<input type="checkbox"/> the address
<input type="checkbox"/> the nationality		
<input type="checkbox"/> the residence		
Name and Address FREEMAN, Jacquelin, C. W.P. Thomson Celcon House 289-293 High Holborn London WC1 V 7HU United Kingdom	State of Nationality	State of Residence
	Telephone No. 44 20 7242 3524	
	Facsimile No. 44 20 7504 6607	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input checked="" type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer R. Raissi
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT

(ALL CONTRACTING STATES)

"PIN CODE"

Title : "FLEXIBLE INTERFACE FOR SECURE INPUT OF
PIN CODE"

Application n° : PCT/IB99/01213

Application date : 04/08/1999 (June 4, 1999)

Owner : OPEN TV, INC

Inventor : DELPUCH Alain

PCT

ACKNOWLEDGEMENT OF RECEIPT OF
DOCUMENTS FILED WITH THE
INTERNATIONAL BUREAU
AS RECEIVING OFFICE

To:

BENECH, Frédéric
Attorney at Law
69, avenue Victor-Hugo
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Date of mailing
(day/month/year)

28 June 1999 (28.06.99)

Facsimile No.: +33 1 40 67 91 40

Applicant's or agent's file reference

BD188

IMPORTANT COMMUNICATION

International application No.

PCT/IB99/01213

Date of receipt (day/month/year)

04 June 1999 (04.06.99)

Applicant

OPEN TV, INC.

Title of the invention

FLEXIBLE INTERFACE FOR SECURE INPUT OF PIN CODE

1. The International Bureau has received the documents/elements listed below on: 25 June 1999 (25.06.99)
from RO/FR (Rule 19.4(a)(ii))

- ☒ PCT Request (4 pages)
- ☒ description (excluding sequence listing part) (11 pages)
- ☒ claims (3 pages)
- ☒ abstract (1 page)
- ☒ drawings (5 pages)
- ☐ sequence listing part of description
- ☐ fee calculation sheet
- ☐ separate authorization to charge deposit account
- ☐ cheque
- ☐ cash (in person only)
- ☐ power(s) of attorney
- ☐ statement(s) explaining lack of signature
- ☐ priority document
- ☐ separate indications concerning deposited micro-organism or other biological material
- ☐ nucleotide and/or amino acid sequence listing on diskette
- ☐ statement(s) accompanying diskette(s) containing sequence listing
- ☐ accompanying letter
- ☐ form PCT/RO/198 (RO/18)
- ☐ other (specify):

The applicant's attention is drawn to the fact that these papers have not yet been checked by this receiving Office in respect of their compliance with the requirements of Article 11(1), that is, whether these papers meet the requirements necessary for the recording of an international filing date. As soon as these papers have been checked, the applicant will be informed accordingly.

2. Additional observations (if necessary):

Name and mailing address of the receiving Office

International Bureau of WIPO
PCT Receiving Office Section
34, chemin des Colombettes, 1211 Geneva 20, Switzerland
Facsimile No. (41-22) 810 06 10 (Groups 3 and 4)

Authorized officer


Agnes Wittmann-Regis
Telephone No. (41-22) 338 90 33

FLEXIBLE INTERFACE FOR SECURE INPUT OF PIN CODE

The invention is related to interfaces between man and machine such as computer, telephone or television
5 devices, which need a Personal Identification Number (PIN) to authenticate the user running an application.

By running an application, one should understand to continue or to have access to an application or to
10 specific resources of an application.

The invention is more particularly but not exclusively related to a system and a method used in an interactive information system such as an entertainment system.

15 Requirements for security in interactive entertainment systems are contradictory.

This is because, in order to run an application, an authentication of the user/viewer is needed while using the specific look and feel of the application.

20 However, it is also preferred that the PIN code should not be given to the application for security purpose.

In fact, two types of solutions are presently known for authentication. Both present drawbacks, as
25 they are only capable of fulfilling part of the above requirements.

Either the application presents its own user interface for PIN entry, then queries the underlying system to check if the given PIN is correct.

30 This solution does not hide the PIN code from the application.

Or the application requests the underlying system to authenticate the viewer. For this the underlying system, using its own look and feel, prompts the viewer for its PIN, verifies its validity and then
5 returns the information that the viewer is authorised or not to the application.

This solution is safe, but does not allow integration of the PIN entry with the application look and feel.

10 In other words and referring to figure 1, it is shown a system which presents a good look and feel , but which is not safe, as the PIN code is known by the application.

More precisely, the application 1 has total
15 control of the look and feel.

The viewer provides his PIN code through input means 2 in digital data to the application via an input device, for instance transmitted as infrared signals 3 to the device on which runs the application
20 which displays in 4 the look and feel for the PIN entry field.

Such application, which is now aware of the PIN code, transmits it in 5 to security manager means 6 which, after checking, confirms in 7 authorisation
25 from the system 8.

The PIN code (Input means 2) is therefore provided outside of the system 8, which is unsecured, and may allow third parties to have access to the PIN code.

Figure 2 displays the other way of functioning of
30 a known system of the prior art.

Here, the application 1 has no control over the look and feel, contrarily to the precedent case.

The application 1 requests in 9 the system 8 to identify the user.

5 The security manager means 6 uses the input means 2 (PIN Code), provided in 3 and the display screen to create in 4 a display of the PIN entry field.

When the security manager means 6 has checked the PIN code, it gives authorisation (7) to display or to
10 access to resource to the application 1.

On a security point of view this system is good as, at no point, the system 8 gives out the PIN code to the application.

However, the look and feel is here totally under
15 system control, without any consideration for the current application look and feel.

It is therefore a main object of the present invention to provide an improved system and method for authorising a secure way of authentication for an
20 access to an application through a PIN code while using the look and feel of said application during the PIN code interrogation.

It is another object of the invention to provide an improved system and method wherein the safety
25 needed for PIN code entry, is combined with perfect integration of the prompt with the service.

It is another objet of the invention to provide a simple and cost saving flexible interface for secure input of a PIN code.

30 The problems outlined above are in large part solved by a system for authenticating a PIN code of a

user in an interactive information system, in order to run an application which comprises :

- input means for PIN code entry,

- security manager means for comparing the PIN
5 code of the user, upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if said PIN code of the user matches the registered PIN code,

- 10 • and display means for displaying any graphics including a PIN entry field, characterised in that

the request for user authentication being provided on the display means via the PIN entry field with the
15 look and feel of said application, the system further comprises emitting means for entering crypted digits in said PIN entry field upon entering the PIN code of the user in the security manager means through said input means,

- 20 and the security manager means are arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.

With such system the PIN code remains hidden from
25 the environment, the user having only the impression to enter physically his PIN code within the PIN entry field of the application. In fact, it remains in the security manager means, which is within the system.

In a preferred embodiment the application is a
30 television program.

The invention also provides a method for authenticating a PIN code of a user in an interactive information system, in order to run an application, wherein said information system emits a request for
5 authenticating a user,

said user enters a PIN code through input means,
said PIN code of the user is compared with a registered PIN code, within security manager means,
and authorisation is provided to run said application
10 if the PIN code of the user matches with the registered PIN code,

characterised in that

- the request for authenticating being provided with a PIN entry field having the look and feel of the
15 application,

- crypted digits are entered in said PIN entry field, upon entering the PIN code by the user in the security manager means,

and authorisation to display the application is
20 only provided after full entry of said crypted digits, and if the PIN code signal of the user is identical to the registered PIN code as checked by the security manager means.

The invention will be better understood from
25 reading the following description of a particular embodiment given by way of non limiting example, and which refers, additionally to the above mentioned figures showing the prior art, to the accompanying drawings in which :

- Figures 1 and 2, already mentioned, are schematic drawings figuring the architecture of the PIN code interface of the prior art.

- Figure 3 is a schematic drawing showing the architecture of the system according to the present invention.

- Figure 4 is a schematic drawing showing an interactive television system for implementing the invention.

10 - Figure 5 is a flowchart related to the application according to the embodiment of the invention more particularly described here.

- Figure 6 is a flowchart implemented by the security manager means according to the embodiment of the invention more particularly described here.

Figure 3 shows a system 10 arranged to authenticate the user before running an application 11, according to the invention.

The application 11 initiates a PIN entry request 20 12 to authenticate the user request and simultaneously asks the security manager means 13 to handle key input 14 to be introduced through Input means 15, for instance through a key pad.

The security manager means 13 comprises a small 25 computer system including a central processing unit (CPU), memory and local storage. It is connected to input/output ports.

It is programmed in order to provide the different steps according to the method of the invention.

30 The application having total control over the graphics displayed and their look and feel, the look

and feel 16 for PIN entry is provided on display means 17 according to the application.

The display means can be a TV screen, an LCD screen of a remote portable telephone, etc.

5 As the security manager means 13 is asked to enter the PIN entry mode, it grabs key inputs 14, analyses these inputs for user authentication and relays in 18 the key presses to the application.

The security manager means does not relay the key
10 values, which therefore remains within the system, but only relays the fact that a key has been pressed, letting for instance the application display an X for each key pressed, in the PIN entry field.

This way the application does not learn about the
15 PIN, but can give user feedback 19 to the display means 17.

When the security manager means 13 recognises the PIN, it informs in 20 the application that the user/viewer has been authenticated.

20 The application can then run, be displayed and/or operate.

Figure 4 shows schematically an interactive television system 21 including a system S according to the embodiment of the invention more particularly
25 described here.

A broadcaster 22 transmit through a satellite 23 the signal corresponding to the look and feel of an application request (arrows 24), for instance a Pay TV program.

The signal is provided to a digital interactive decoder 25, currently packaged in a set-top connected to a television 26.

It delivers true interactive television using the
5 broadcast-oriented infrastructure currently predominant in the television industry.

The decoder 25 comprises in a manner known per se, a demultiplexer 27 and an application programming interface 28, stored in a local memory (RAM, EPROM
10 FLASH memory, ...), such as the one proposed by the applicant OPEN TV, and which provides a library of functions which can display graphics on the television screen, control audio/video services, accept user input and communicate with the outside
15 world.

The decoder 25 also comprises a CPU 29, Audio/Video decoding means 30, connected through audio video output 31 to the television set 26, storage means 32 for storing an operating system for
20 the CPU 29, such as the one provided by OPEN TV.

The CPU 29 further includes part of the security manager means 33 as described in the invention.

The decoder 25 also comprises Input means 34 such as infrared sensors arranged to receive infrared
25 signals 35 emitted by a remote control apparatus 36 having a key pad 37, and display function means 38 controlled by the CPU.

The decoder 25 also comprises output means having a modem and/or a multiplexer 39 for providing back
30 return signals 40 on a return channel to the broadcaster 22 and/or a server.

The broadcast system may be, of course based on satellite or cable or some other medium.

Figure 5 shows a block diagram according to an embodiment of the invention to be included in an application to authenticate the users to continue or to have access to specific resources which needs authentication by a PIN code.

The application first uses some display function (block 41) to present a PIN entry field to the viewer.

It then asks the security manager means to enter the PIN entry mode and check in 43 if keys are pressed.

As keys are pressed, it gives (block 44) feedback using the display function.

If the user is not authenticated (step 45), it comes back (loop 46) to check 43.

If the user is authenticated (in 47), there is an OK from the security manager means and the application can go on (step 48).

An example of a block diagram of the security manager program is provided on figure 6 and is performed entirely (and secretly) within the System S.

At the application request in 49, the security manager means enters a PIN entry mode (step 50).

The PIN repertory is then initialised to empty in 51 and the system wait for a key to be pressed (check 52).

If the key is an « ending » key (for instance OK or enter), (check 53) there is a release of the key input grabbing (step 54).

If not there is a loop 55 for more key.

5 After release of the key input grabbing, the security manager means checks in 56 the entered PIN against the user's PIN.

It then either returns success (step 57), or failure (step 58) to application (step 45 of the application), before exiting PIN entry mode in 59.

10 It will now be described the functioning of the system while referring to figure 4.

At the broadcast site, pay TV programs of a Specific Provider are stored.

15 The pay TV programs are encoded into a digital bitstream which is compressed and multiplexed with the signal of the PIN code field of the Specific Provider, including its logo and a menu to allow the viewer to have access to other movies of the provider, to form a single bitstream.

This single bitstream is then broadcasted to all subscribers. At each customer's site, the bitstream is received by the decoder 25 where the audio and video are decompressed and the PIN code field is sent

25 to the customer's television set 26.

The request for the PIN code of the user is therefore prompted to the viewer.

The viewer then, for instance through a remote control apparatus, can enter his PIN code by pressing

30 keys.

At each pressing, a cross appears in the PIN entry field on the TV Screen.

Meanwhile the Security manager means 33 compares the PIN code with a preregistered user's PIN code entered before in the decoder for instance via a modem.

If the PIN codes matches, signals are sent to the application decoding process 30, and such decoding process is then authorised for displaying the application on the TV set.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore the present invention in its broader aspects is not limited to the specific details, representative devices and illustrated examples shown and described herein.

For instance, it also includes application to PIN code entry for obtaining specific services through mobile phone, for instance via GSM, or other specific services via Television and/or Internet.

CLAIMS

1. A system (10, S) for authenticating a PIN code of a user in an interactive information system in order to run an application (11),

wherein it comprises

- input means (15, 34, 35, 36, 37) for PIN code entry,

- security manager means (13, 33) for comparing the PIN code of the user upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if the PIN code of the user matches with the registered PIN code, and

- display means (17, 29, 38) for displaying any graphics including a PIN entry field, characterised in that

the request for user authentication being provided on the display means via the PIN entry field with the look and feel of said application, the system further comprises emitting means (29, 38) for entering crypted digits in said PIN entry field upon entering the PIN code of the user in the security manager means through said input means,

and the security manager means (13, 33) are arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.

2. A system according to claim 1 characterised in that the application is a television program.

3. A system according to claim 1, characterised in that the application is a service provided on mobile Telephone.

4. A method for authenticating a PIN code of a user in an interactive information system, in order to run an application, wherein said information system emits a request for authenticating a user (41), said user enters a PIN code (43) through input means, said PIN code of the user is compared (45) with a registered PIN code within security manager means, and authorisation is provided to run said application if the PIN code of the user matches with the registered PIN code, characterised in that

- the request for authenticating being provided with a PIN entry field having the look and feel of the application,
- crypted digits are entered (44) in said PIN entry field, upon entering the PIN code by the user in the security manager means,

and authorisation to display the application is only provided (47) after full entry of said crypted digits, and if the PIN code of the user is identical to the registered PIN code as checked by the security manager means.

5. A method according to claim 4, characterised in that, for presenting the request for authentication, the application undertakes the following steps :

- presenting a PIN entry field to the user (41),
- asking the security manager means to enter a PIN Entry Mode (42),
- the input means comprising keys, checking if keys
5 are pressed by the user (43),
- while keys are pressed, giving feedback in entering said crypted digits in said PIN entry field (44), and,
- if the user is authenticated (45) by said security
10 manager means, giving said authorisation (47) to display (48) the application.

6. A method according to any of claims 4 and 5, characterised in that, for providing the authorisation to display the application the security
15 manager means undertakes the following steps :

- at the request of the application entering a PIN entry mode (50),
- initialising to empty a PIN repertory (51) and, the input means comprising keys, waiting for a key to
20 be pressed by the user (52),
- upon occurrence of pressing an « ending key », checking if a release occurs (53), checking the entered PIN against the user's PIN (56), and if success authorising the application to run.

25 7. A method according to any of claims 4 to 6, characterised in that the application is a Television program.

8. A method according to any of claims 4 to 6, characterised in that the application is a service
30 provided on a mobile telephone.

ABSTRACT

The present invention concerns a system (10) and a process for authenticating a PIN code of a user in an interactive information system in order to run an application. It comprises input means (15) for PIN code entry, security manager means (13) for comparing the PIN code of the user upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if the PIN code of the user matches with the registered PIN code, and display means (17) for displaying any graphics including a PIN entry field. The request for user authentication is provided on the display means via the Pin entry field with the look and feel of said application. The system further comprises emitting means for entering crypted digits, the security manager means (13) being arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.

Figure 3

FIGURE OF ABSTRACT

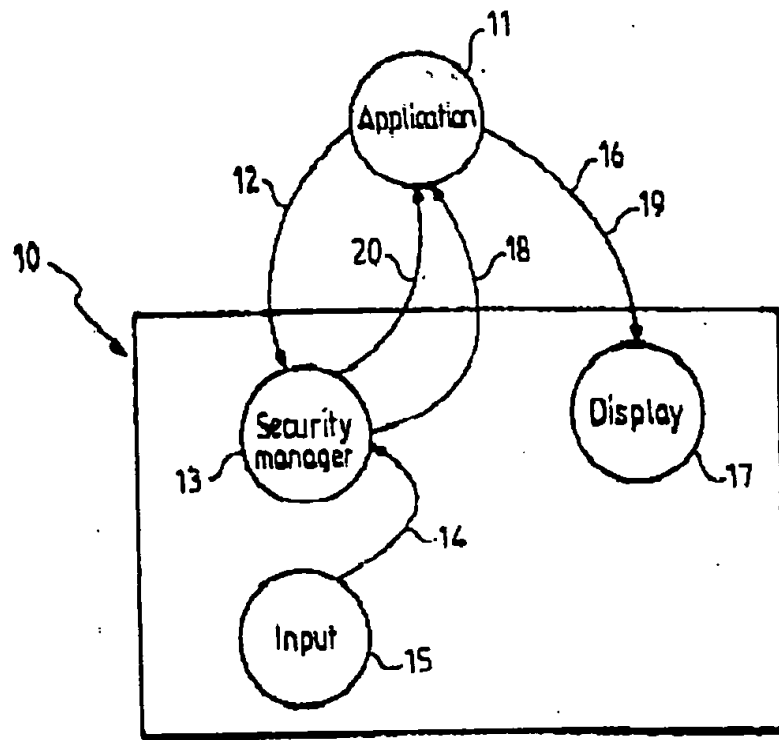


FIG. 3

1/5

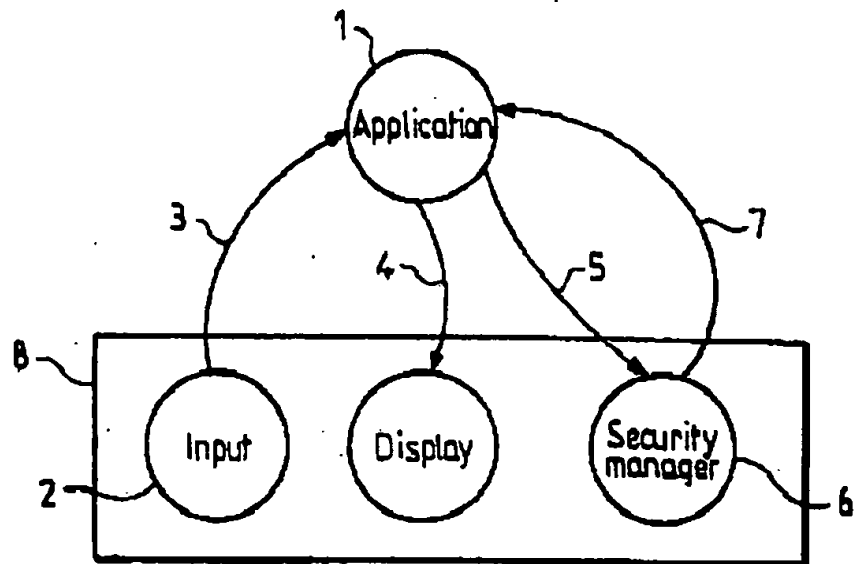


FIG. 1 PRIOR ART

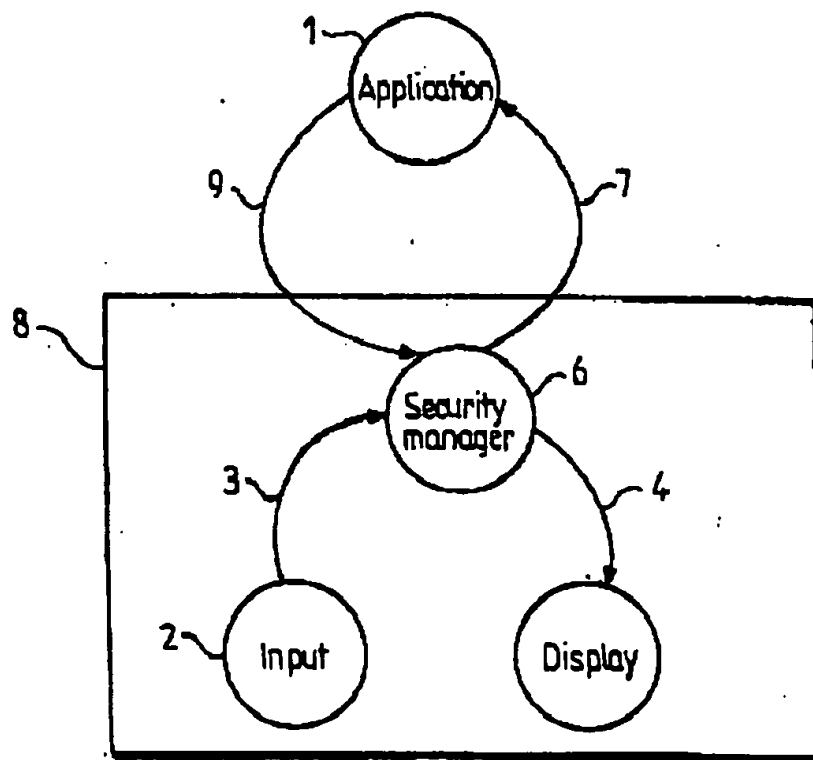


FIG. 2 PRIOR ART

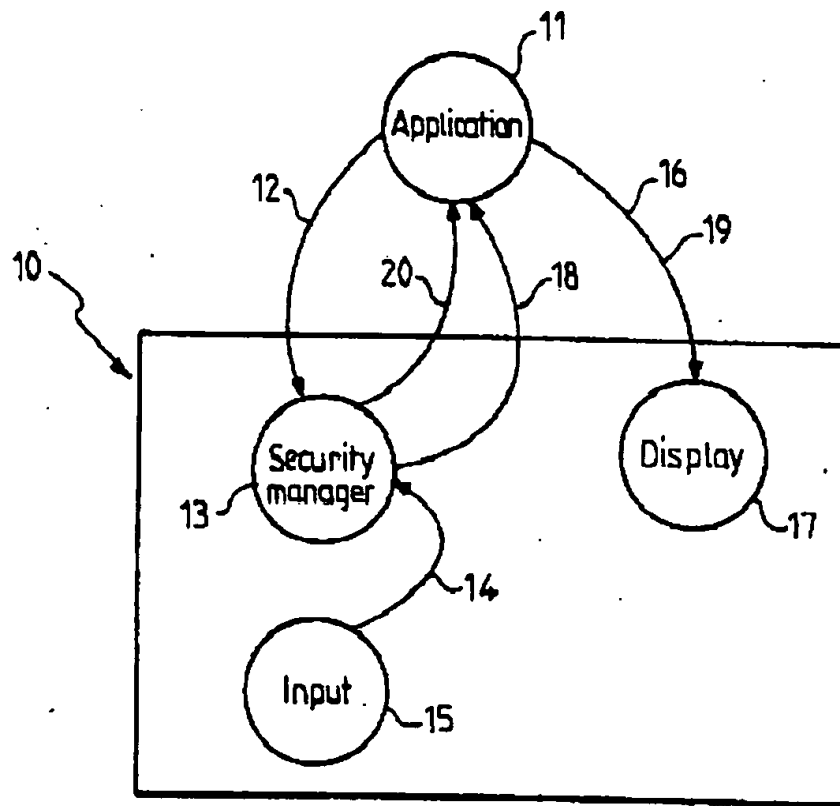


FIG. 3

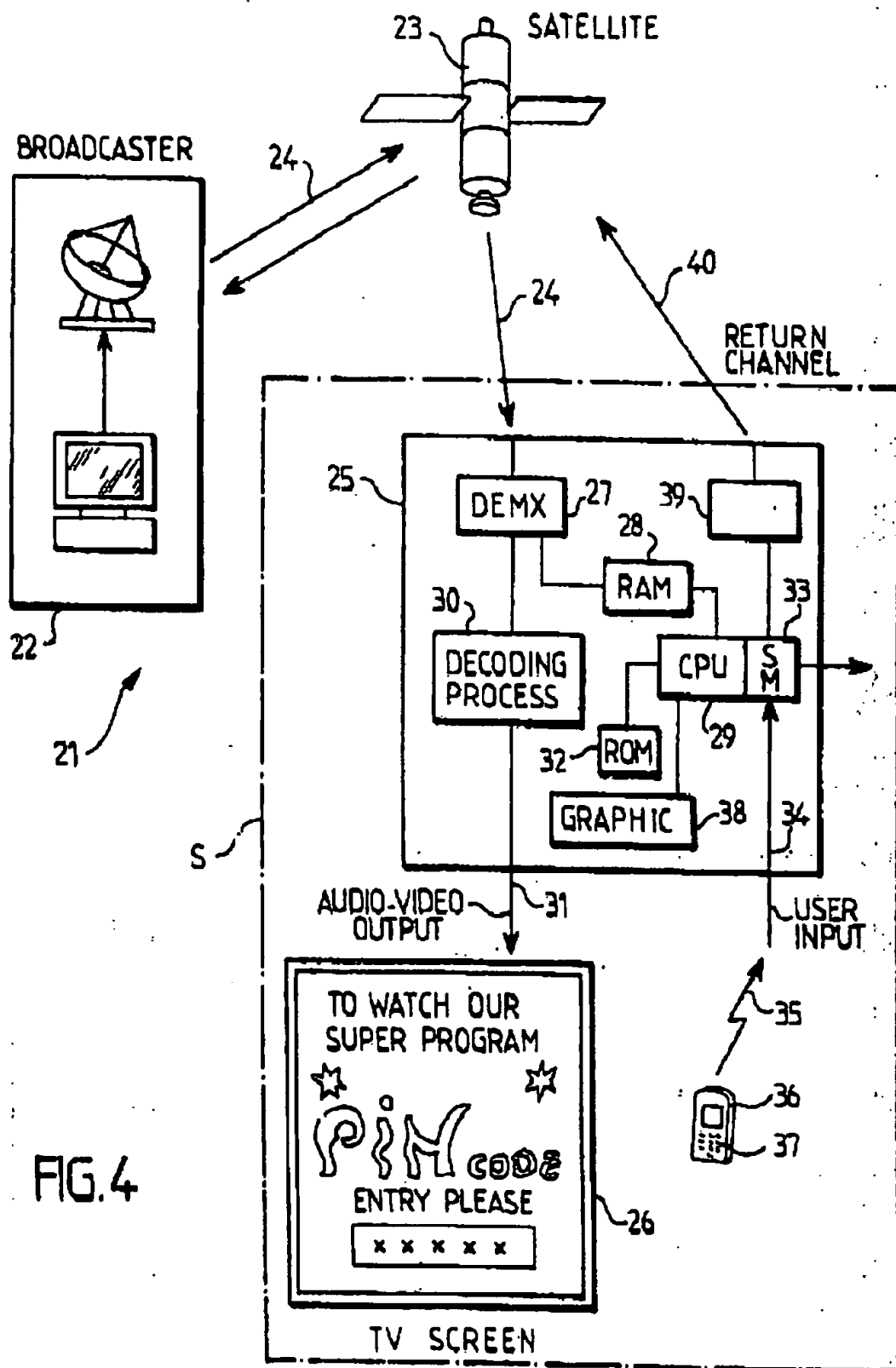


FIG. 4

4/5

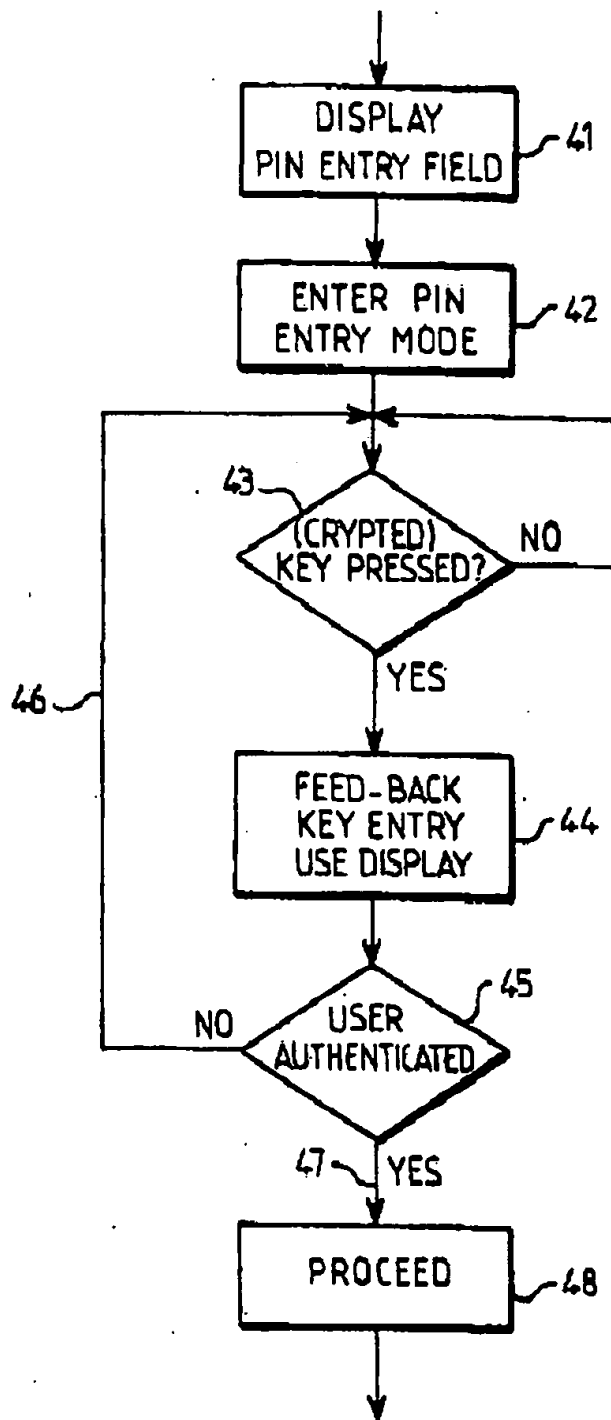


FIG.5

5/5

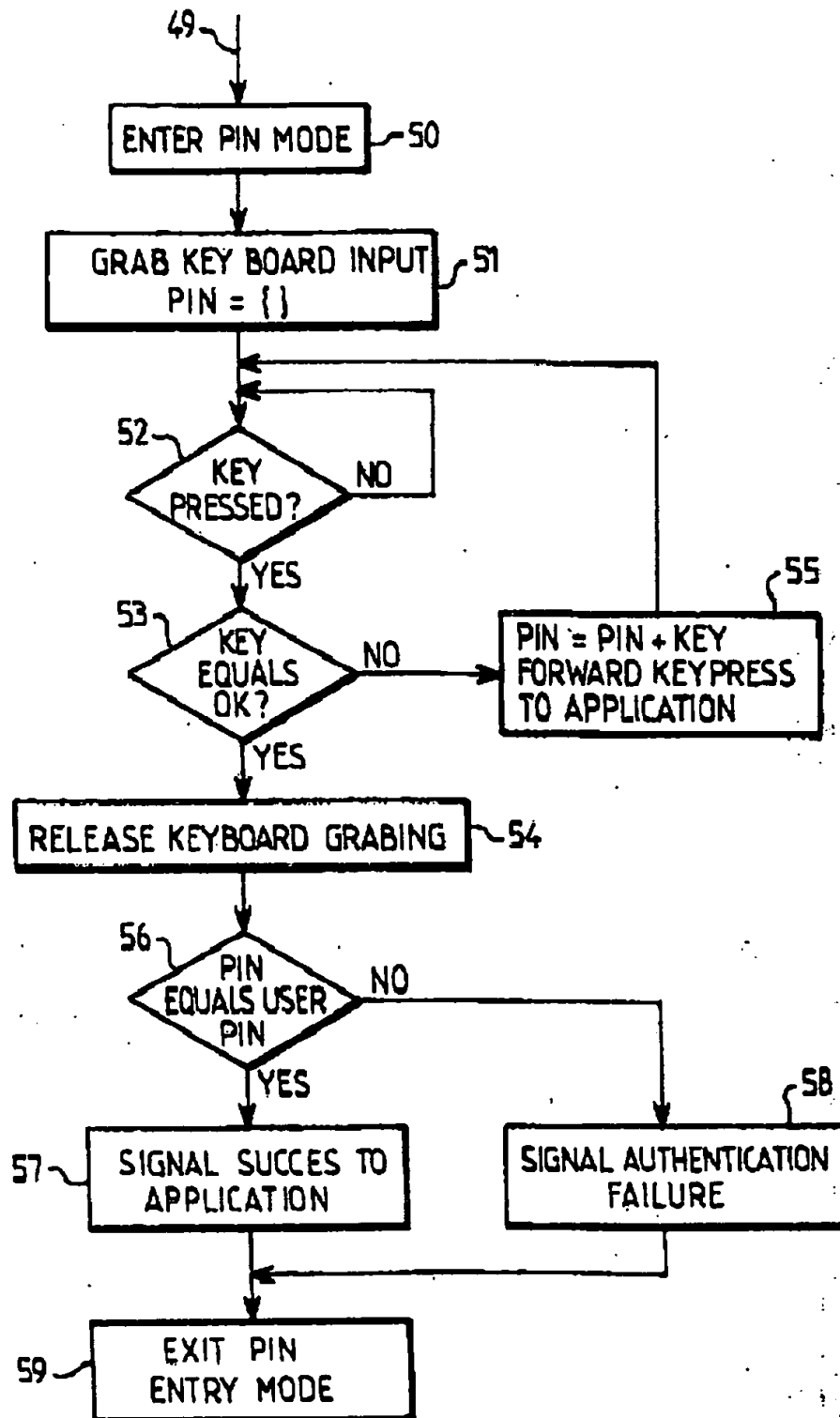


FIG.6

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

B0188

Box No. I TITLE OF INVENTION
FLEXIBLE INTERFACE FOR SECURE INPUT OF PIN CODE

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the applicant indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)

OPEN TV, INC.
401 East Middlefield Road
MOUNTAIN VIEW
California 94043
(U.S.A.)

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the State of the Applicant

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the applicant indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)

DELPUCH Alain
34, Parc des Essarts
F-78690 LES-ESSARTS-LE-ROI
(FRANCE)

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (if this is marked, do not fill in)

State (that is, country) of nationality:

FR

State (that is, country) of residence:

FR

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the State of the Applicant

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common rep

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

BEWECH Frédéric
Attorney at Law
69, avenue Victor-Hugo
F-75783 PARIS CEDEX 16

Telephone No.

01 44173660

Facsimile No.

0140679140

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed. The address shown is used instead to indicate a special address in which correspondence should be sent.

Form PCT/RO/101 (first sheet) (July 1988; reprinted January 1999)

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Sheet No. ... 2 ...

Reg. No. V DESIGNATION OF STATES
The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked)

- Regional Patents**
- ☒ **AF** **ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** **European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the EPC
- ☒ **OA** **OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Cote d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection is desired, specify on dotted line)

National Patents (if other kind of protection or treatment desired, specify on dotted line)

- | | |
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| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
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| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NZ New Zealand |
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| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
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| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |
| <input checked="" type="checkbox"/> LR Liberia | |

Check-boxes reserved for designating States (for the national patent) which have become party to the issuance of this sheet:

- ☒ South Africa
- ☒ United Arab Emirates

Provisional Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) designations which would be permitted under the PCT except any designations indicated in the Supplemental Data as being excluded from the scope of this statement. The applicant declares that these additional designations are subject to confirmation by the designated Office within the 15-month period from the priority date if it is to be regarded as an indication of the designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as an indication of the designation which is not confirmed before the expiration of 15 months from the priority date. Confirmation of a designation consists of the filing of a notice specifying that designation and the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

Sheet No. 2

Supplemental Box If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box III (as the case may be), indicate the name of the applicant(s) involved and, next to each, such name, the State(s) (as applicable, ARIPO, European or OAPI patent) for the purposes of which the named person is applicant.
- (i) If more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box III (as the case may be), indicate the name of the applicant(s) involved and, next to each, such name, the State(s) (as applicable, ARIPO, European or OAPI patent) for the purposes of which the named person is applicant.
- (ii) If, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II & III" (as the case may be), indicate the name of the applicant(s) involved and, next to each, such name, the State(s) (as applicable, ARIPO, European or OAPI patent) for the purposes of which the named person is applicant.
- (iii) If, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor-applicant is not inventor for all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II & III" (as the case may be), indicate the name of the inventor(s) and, next to each, such name, the State(s) (as applicable, ARIPO, European or OAPI patent) for the purposes of which the named person is inventor.
- (iv) If, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV.
- (v) If, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or "improvement," in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI) and after each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent application.
- (vi) If, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.
- (vii) If, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.
- (viii) If, in Box No. VI, the earlier application is an ARIPO application and indicates at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed.
2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any of the scope of that statement: in such case, write "Designations excluded from precautionary designation statement" and name or pre-number code of such State so excluded.
3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.

**Continuation of
Box No. IV : AGENTS**

DULEY Alette
MAFFIOLINI Philippe
Attorneys at Law
69, avenue Victor-Hugo
P-75783 PARIS CEDEX 16
(France)

Sheet No. 4

Box No. VI PRIORITY CLAIM					Box
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:			Applicant
		National application: country	Regional application: regional Office	International app. receiving (1)	
Item (1)					
Item (2)					
Item (3)					

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present International application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplementary Box at least one country part (contribution for the Protection of Industrial Property for which that earlier application was filed (Rule 4.1(d)(ii)). See Supplementary Box

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are requested to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

Request to use results of earlier search: reference to that search (if any) has been carried out by or requested from the International Searching Authority

Date (day/month/year) Number Country (or no)

ISA /

Box No. VIII CHECK LIST: LANGUAGE OF FILING

This international application contains the following number of sheets:

request	4
description (excluding sequence listing part)	11
claims	3
abstract	1
drawings	5
sequence listing part of description	-
Total number of sheets	24

This international application is accompanied by the item(s) marked below:

- ☐ fee calculation sheet
- ☐ separate signed power of attorney
- ☐ copy of general power of attorney: reference number, if any:
- ☐ statement explaining lack of signature
- ☐ priority document(s) identified in Box No. VI as item(s):
- ☐ translation of international application into (language):
- ☐ separate indication concerning deposited microorganism or other biologic
- ☐ nucleotide and/or amino acid sequence listing in computer readable form
- ☐ other (specify):

Figure of the drawings which should accompany the abstract: 3

Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Name in each signature: indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from the

Paris, June 4, 1999

F. Benoit

BENOIT Frédéric
Attorney at Law

For receiving Office use only		2. C	3. C
1. Date of actual receipt of the purported international application:		<input type="checkbox"/>	received
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		<input type="checkbox"/>	received
4. Date of timely receipt of the required correction under PCT Article 17(2):			
5. International Searching Authority (if two or more are competent): ISA /			
6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.			

Date of receipt of the record copy by the International Bureau:

Form PCT/RO/101 (last sheet) (July 1998: reprint January 1999)

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REC'D 06 AUG 2001

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JCF/P501308WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IB99/01213	International filing date (day/month/year) 04/06/1999	Priority date (day/month/year) 04/06/1999
International Patent Classification (IPC) or national classification and IPC H04N7/16		
Applicant OPEN TV, INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 10 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☐ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 03/01/2001	Date of completion of this report 02.08.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Loeser, E Telephone No. +49 89 2399 8482 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB99/01213

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-11 as originally filed

Claims, No.:

1-8 as originally filed

Drawings, sheets:

1-5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB99/01213

- ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 1-8.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*): .
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-8 are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB99/01213

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

1. General

The present application does not satisfy the criteria set forth in Article 6 PCT. Details of the objections are set out below.

2. Concerning Section VIII - Art. 6 PCT:

2.1. Claim 1

The wording of claim 1 is unclear (Art. 6 PCT contravened), for at least the following reasons:

Page 12 lines 15-16: It is not clear by which means the display means 17 is controlled (according to Fig. 3, it is controlled by the application 11).

Page 12 lines 21-23: The feature "emitting means (29, 38) for entering crypted digits ..." alludes to second possibility for the user to enter his PIN by way of encrypted digits thereof. This does not match with the description (p.7 lines 9-16, Figs.3, 4) according to which an encrypted digit is merely displayed under control of the application when the user presses a key for entering a digit of his PIN. The presently used term "entering" in conjunction with "emitting" is considered to be misleading in this context.

Page 12 lines 25-28: This passage appears to be a mere duplicate of the substance provided by lines 9 to 14.

One feature identified therein is that "the security manager means are arranged to give authorization to run the application after full entry of said crypted digits". In this context, it is not clear in which way the security manager means are informed about the crypted digits being fully displayed under control of the application.

The description appears to be silent about a connection from the display of crypted digits to the security manager means, so that support of the feature as presently claimed by

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

a described embodiment cannot at present be acknowledged.

It is further to be noted that it is an inherent feature resulting from lines 12-14 that the user has to input all the digits of a PIN before a match with the registered PIN code can be detected by the security manager means.

It is further considered that the last paragraph of claim 1 is superfluous and as such obscures the claim's scope of protection.

These objections and other objections under Art. 6 PCT could be overcome by drafting claim 1 in the following manner (basis of suggested amendments: Figs. 3-5 and related text passages, such as p.7 lines 9-16, p.11 lines 1-2):

"1.

A system (10, S) for authenticating ...,
the system comprising:

- (a) input means (15; 34-37) for PIN code entry,
 - (b) security manager means (13, 33) for comparing the PIN code of the user inputted via said input means upon a request (49) for user authentication, supplied from the application, with a registered PIN code and for giving an authorisation signal (20) to said application to run said application if the PIN code of the user matches with the registered PIN code,
 - (c) display means (17, 29, 38) for displaying any graphics including a PIN entry field,
- the system being characterised by further comprising
- (d) means for providing said request (16, 41) for user authentication from said application to said display means, wherein said request is displayed with the PIN entry field of the display means and is displayed with the look and feel of said application,
 - (e) means for supplying (18) information from said security manager means to said application about PIN code entering key-pressing operations by said user, wherein entered PIN code is not supplied to said application;
 - (f) and display control means (29, 38) coupled to said application to effect display of crypted digits in said PIN entry

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

field corresponding to said information about PIN code
entering operations supplied to said application.

It is to be noted that the feature "with the look and feel of said application" is considered an artistic feature rather than a technical feature. Thus the feature does not lend itself to establishing novelty or inventive step given the provisions of Art. 52(1)b).

Moreover, in the suggestion set out above, feature (e) is provided as a feature which is considered essential to achieving the objectives of the invention set out in the introductory portion of the description (avoiding the transmission of a pin code to the application while still providing a pin entry feedback to the user in the framework of the look and feel of the application). The present claim contravenes Art. 6 PCT because it lacks this essential feature.

2.2. Claim 4

Claim 4 also suffers from at least some of the deficiencies identified above with respect to claim 1 (c.f. paragraph 2.1 above).

These and other deficiencies will become apparent from the following suggestion for an amended claim 4, which suggestion is streamlined with the suggestion for claim 1, and in which the deficiencies with respect to Art. 6 PCT are considered to be overcome:

"4.

A method for authenticating ...,
wherein

- (a) said application provides a display of a request (16) for user authentication upon which request the user enters (43) a PIN code through input means;
- (b) the entered PIN code is compared (45; 56) with a registered PIN code within security manager means and if the PIN

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

- code of the user matches with the registered PIN code the security manager means provide to the information system an authorisation (20; 47) to run said application;
- (c) said request for user authentication is displayed by display means, along with a PIN entry field,
the method being characterized in that
- (d) the request (16) for user authentication is provided from said application to the display means, and is displayed with the look and feel (16) of said application;
- (e) information is supplied (18; 55) from the security manager means to the application about PIN code entering key-pressing operations by said user, wherein entered PIN code is not supplied to said application;
- (f) and the application causes crypted digits to be displayed in said PIN entry field corresponding to said information about PIN code entering key-pressing operations supplied to said application.

2.3. Claims 2, 3, 7, 8

According to the description (eg Fig.3), the application 11 interacts with the security manager and controls display 17 in a particular manner (encrypted display of inputted PIN characters). Such interactions and operations are not compatible with normal broadcast television programs (unidirectional transmission only). To overcome this problem, claim 2 could be amended to read e.g.:

"A system ... characterised in that the application includes a television program".

Claims 3, 7 and 8 could be correspondingly amended.

2.4. Claims 5, 6

In light of the suggestion in respect of claim 4 set out above, claim 5 as presently on file does not appear to provide any substantial further information. If the suggested amendments to claim 4 are adopted, claim 5 would be superfluous.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

3. Concerning Section V - Articles 33(2) and 33(3) PCT

The following document are cited:

D1: US-A-5 870 723;

D2: US-A-5 267 149.

3.1.

In view of the claims's deficiencies with respect to Art. 6 PCT, it is not possible to examine the claims with respect to novelty and inventive step.

3.2.

However, a preliminary opinion as to novelty and inventive step of an amended claim 1 as proposed above is provided below:

D1 discloses (col.16 lines 19-29) displaying a request to a user to enter his PIN code, enabling input means therefor, receiving PIN code key input from the user and providing input feedback to the user by displaying the PIN code in encrypted form. The entering of a PIN code as disclosed implies a subsequent action, such as enabling an application to run, when the entered PIN code is detected to be correct, e.g. by way of comparison with a registered PIN code.

Thus D1 anticipates features (a) to (c) identified in the proposal for claim 1 set out in paragraph 2.1 above.

According to D1 (abstract), the PIN code is encrypted at a user's terminal and transmitted to a host computer which provides a current application. This is different from claim 1 (feature (e) as proposed) according to which not the PIN code but merely key stroke indications are transmitted to the (host) application.

Also, D1 does not appear to provide any detail as to how precisely (from where) the display of the PIN code entry field and the display of the encrypted PIN code are controlled. Thus controlling the display from the application can be considered another detail of claim 1 (as proposed for amendment) that is

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB99/01213

not anticipated.

Moreover, D1 is not concerned with the specific objectives (identified in paragraph 2.1 above) underlying the subject-matter of claim 1 (as disclosed in the description and as considered to be sufficiently represented now in the proposal for amending claim 1).

The relevant teachings of D2 (Figs. 3, 6 and related text passages) are similar to those of D1.

The subject-matter provided by claim 1 as proposed for amendment does not appear to be compromised by the presently available prior art.

The findings set out in hereinabove with respect to an amended claim 1 would correspondingly apply to an amended claim 4.

4. Concerning Section VII: Description and formal matters

- (a) Documents reflecting the prior art referred to on page 1 (lines 23-26) and described on pages 1-3 are not identified in the description (Rule 5.1(a)(ii) PCT).
- (b) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.
- (d) In Fig. 6, the text of box 54 should correctly read "... GRABBING" and the text of box 57 should correctly read "... SUCCESS ...".

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference B0188	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/IB 99/ 01213	International filing date (day/month/year) 04/06/1999	(Earliest) Priority Date (day/month/year)
Applicant OPEN TV, INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

3

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No.

P 99/01213

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N7/16 G07F7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N G07F H04L H04Q G06F G07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 870 723 A (HOFFMAN NED ET AL) 9 February 1999 (1999-02-09) column 4, line 28 - line 49 column 10, line 1 - line 7 column 16, line 19 - line 29	1-8
Y	US 5 682 325 A (GOODMAN WILLIAM ET AL) 28 October 1997 (1997-10-28) abstract column 15, line 41 - column 16, line 44	1,2,4,5, 7
Y	US 5 267 149 A (ANADA NORIAKI ET AL) 30 November 1993 (1993-11-30) figure 3B column 3, line 50 - line 55 column 4, line 34 - line 51	1,2,4,5, 7
	-/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

8 February 2000

Date of mailing of the international search report

15/02/2000

Name and mailing address of the ISA

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Fax (+31-70) 340-3016

Authorized officer

Lindholm, A-M

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 99/01213

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 37695 A (SCIENTIFIC ATLANTA ;TIME WARNER ENTERTAINMENT COMP (US)) 27 August 1998 (1998-08-27) page 62, line 10 - line 34; figure 25	1
A	WO 97 19555 A (PREVUE INTERNATIONAL INC) 29 May 1997 (1997-05-29) figures 2,5 page 1, line 24 -page 2, line 2 page 2, line 24 - line 30 page 10, line 1 - line 9	1,2,4-7
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Information on patent family members

International Application No

P 18 99/01213

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 December 2000 (14.12.2000)

PCT

(10) International Publication Number
WO 00/76215 A1

(51) International Patent Classification⁷: H04N 7/16, G07F 7/10

(21) International Application Number: PCT/IB99/01213

(22) International Filing Date: 4 June 1999 (04.06.1999)

(25) Filing Language: English

(26) Publication Language: English

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(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW.

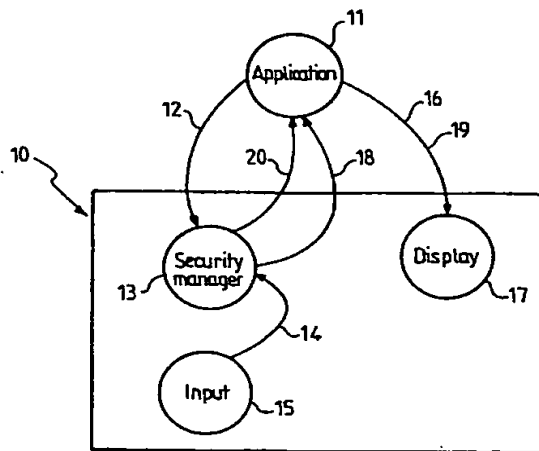
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLEXIBLE INTERFACE FOR SECURE INPUT OF PIN CODE



(57) Abstract: The present invention concerns a system (10) and a process for authenticating a PIN code of a user in an interactive information system in order to run an application. It comprises input means (15) for PIN code entry, security manager means (13) for comparing the PIN code of the user upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if the PIN code of the user matches with the registered PIN code, and display means (17) for displaying any graphics including a PIN entry field. The request for user authentication is provided on the display means via the PIN entry field with the look and feel of said application. The system further comprises emitting means for entering crypted digits, the security manager means (13) being arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.

WO 00/76215 A1

FLEXIBLE INTERFACE FOR SECURE INPUT OF PIN CODE

The invention is related to interfaces between man and machine such as computer, telephone or television devices, which need a Personal Identification Number (PIN) to authenticate the user running an application.

By running an application, one should understand to continue or to have access to an application or to specific resources of an application.

The invention is more particularly but not exclusively related to a system and a method used in an interactive information system such as an entertainment system.

Requirements for security in interactive entertainment systems are contradictory.

This is because, in order to run an application, an authentication of the user/viewer is needed while using the specific look and feel of the application.

However, it is also preferred that the PIN code should not be given to the application for security purpose.

In fact, two types of solutions are presently known for authentication. Both present drawbacks, as they are only capable of fulfilling part of the above requirements.

Either the application presents its own user interface for PIN entry, then queries the underlying system to check if the given PIN is correct.

This solution does not hide the PIN code from the application.

Or the application requests the underlying system to authenticate the viewer. For this the underlying system, using its own look and feel, prompts the viewer for its PIN, verifies its validity and then
5 returns the information that the viewer is authorised or not to the application.

This solution is safe, but does not allow integration of the PIN entry with the application look and feel.

10 In other words and referring to figure 1, it is shown a system which presents a good look and feel , but which is not safe, as the PIN code is known by the application.

More precisely, the application 1 has total
15 control of the look and feel.

The viewer provides his PIN code through input means 2 in digital data to the application via an input device, for instance transmitted as infrared signals 3 to the device on which runs the application
20 which displays in 4 the look and feel for the PIN entry field.

Such application, which is now aware of the PIN code, transmits it in 5 to security manager means 6 which, after checking, confirms in 7 authorisation
25 from the system 8.

The PIN code (Input means 2) is therefore provided outside of the system 8, which is unsecured, and may allows third parties to have access to the PIN code.

Figure 2 displays the other way of functioning of
30 a known system of the prior art.

Here, the application 1 has no control over the look and feel, contrarily to the precedent case.

The application 1 requests in 9 the system 8 to identify the user.

5 The security manager means 6 uses the input means 2 (PIN Code), provided in 3 and the display screen to create in 4 a display of the PIN entry field.

When the security manager means 6 has checked the PIN code, it gives authorisation (7) to display or to
10 access to resource to the application 1.

On a security point of view this system is good as, at no point, the system 8 gives out the PIN code to the application.

However, the look and feel is here totally under
15 system control, without any consideration for the current application look and feel.

It is therefore a main object of the present invention to provide an improved system and method for authorising a secure way of authentication for an
20 access to an application through a PIN code while using the look and feel of said application during the PIN code interrogation.

It is another object of the invention to provide an improved system and method wherein the safety
25 needed for PIN code entry, is combined with perfect integration of the prompt with the service.

It is another objet of the invention to provide a simple and cost saving flexible interface for secure input of a PIN code.

30 The problems outlined above are in large part solved by a system for authenticating a PIN code of a

user in an interactive information system, in order to run an application which comprises :

- input means for PIN code entry,
- security manager means for comparing the PIN
5 code of the user, upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if said PIN code of the user matches the registered PIN code,
- 10 • and display means for displaying any graphics including a PIN entry field, characterised in that the request for user authentication being provided on the display means via the PIN entry field with the
15 look and feel of said application, the system further comprises emitting means for entering crypted digits in said PIN entry field upon entering the PIN code of the user in the security manager means through said input means,
- 20 and the security manager means are arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.

With such system the PIN code remains hidden from
25 the environment, the user having only the impression to enter physically his PIN code within the PIN entry field of the application. In fact, it remains in the security manager means, which is within the system.

In a preferred embodiment the application is a
30 television program.

The invention also provides a method for authenticating a PIN code of a user in an interactive information system, in order to run an application, wherein said information system emits a request for authenticating a user,

5 said user enters a PIN code through input means, said PIN code of the user is compared with a registered PIN code, within security manager means, and authorisation is provided to run said application

10 if the PIN code of the user matches with the registered PIN code, characterised in that

- the request for authenticating being provided with a PIN entry field having the look and feel of the

15 application,

- crypted digits are entered in said PIN entry field, upon entering the PIN code by the user in the security manager means,

and authorisation to display the application is

20 only provided after full entry of said crypted digits, and if the PIN code signal of the user is identical to the registered PIN code as checked by the security manager means.

The invention will be better understood from

25 reading the following description of a particular embodiment given by way of non limiting example, and which refers, additionally to the above mentioned figures showing the prior art, to the accompanying drawings in which :

- Figures 1 and 2, already mentioned, are schematic drawings figuring the architecture of the PIN code interface of the prior art.

- Figure 3 is a schematic drawing showing the architecture of the system according to the present invention.

- Figure 4 is a schematic drawing showing an interactive television system for implementing the invention.

10 - Figure 5 is a flowchart related to the application according to the embodiment of the invention more particularly described here.

- Figure 6 is a flowchart implemented by the security manager means according to the embodiment of the invention more particularly described here.

Figure 3 shows a system 10 arranged to authenticate the user before running an application 11, according to the invention.

The application 11 initiates a PIN entry request
20 12 to authenticate the user request and simultaneously asks the security manager means 13 to handle key input 14 to be introduced through Input means 15, for instance through a key pad.

The security manager means 13 comprises a small
25 computer system including a central processing unit (CPU), memory and local storage. It is connected to input/output ports.

It is programmed in order to provide the different steps according to the method of the invention.

30 The application having total control over the graphics displayed and their look and feel, the look

and feel 16 for PIN entry is provided on display means 17 according to the application.

The display means can be a TV screen, an LCD screen of a remote portable telephone, etc.

5 As the security manager means 13 is asked to enter the PIN entry mode, it grabs key inputs 14, analyses these inputs for user authentication and relays in 18 the key presses to the application.

The security manager means does not relay the key
10 values, which therefore remains within the system, but only relays the fact that a key has been pressed, letting for instance the application display an X for each key pressed, in the PIN entry field.

This way the application does not learn about the
15 PIN, but can give user feedback 19 to the display means 17.

When the security manager means 13 recognises the PIN, it informs in 20 the application that the user/viewer has been authenticated.

20 The application can then run, be displayed and/or operate.

Figure 4 shows schematically an interactive television system 21 including a system S according to the embodiment of the invention more particularly
25 described here.

A broadcaster 22 transmit through a satellite 23 the signal corresponding to the look and feel of an application request (arrows 24), for instance a Pay TV program.

The signal is provided to a digital interactive decoder 25, currently packaged in a set-top connected to a television 26.

It delivers true interactive television using the
5 broadcast-oriented infrastructure currently predominant in the television industry.

The decoder 25 comprises in a manner known per se, a demultiplexer 27 and an application programming interface 28, stored in a local memory (RAM, EPROM
10 FLASH memory, ...), such as the one proposed by the applicant OPEN TV, and which provides a library of functions which can display graphics on the television screen, control audio/video services, accept user input and communicate with the outside
15 world.

The decoder 25 also comprises a CPU 29, Audio/Video decoding means 30, connected through audio video output 31 to the television set 26, storage means 32 for storing an operating system for
20 the CPU 29, such as the one provided by OPEN TV.

The CPU 29 further includes part of the security manager means 33 as described in the invention.

The decoder 25 also comprises Input means 34 such as infrared sensors arranged to receive infrared
25 signals 35 emitted by a remote control apparatus 36 having a key pad 37, and display function means 38 controlled by the CPU.

The decoder 25 also comprises output means having a modem and/or a multiplexer 39 for providing back
30 return signals 40 on a return channel to the broadcaster 22 and/or a server.

The broadcast system may be, of course based on satellite or cable or some other medium.

Figure 5 shows a block diagram according to an embodiment of the invention to be included in an application to authenticate the users to continue or
5 to have access to specific resources which needs authentication by a PIN code.

The application first uses some display function (block 41) to present a PIN entry field to the
10 viewer.

It then asks the security manager means to enter the PIN entry mode and check in 43 if keys are pressed.

As keys are pressed, it gives (block 44) feedback
15 using the display function.

If the user is not authenticated (step 45), it comes back (loop 46) to check 43.

If the user is authenticated (in 47), there is an OK from the security manager means and the
20 application can go on (step 48).

An example of a block diagram of the security manager program is provided on figure 6 and is performed entirely (and secretly) within the System S.

25 At the application request in 49, the security manager means enters a PIN entry mode (step 50).

The PIN repertory is then initialised to empty in 51 and the system wait for a key to be pressed (check 52).

If the key is an « ending » key (for instance OK or enter), (check 53) there is a release of the key input grabbing (step 54).

If not there is a loop 55 for more key.

5 After release of the key input grabbing, the security manager means checks in 56 the entered PIN against the user's PIN.

It then either returns success (step 57), or failure (step 58) to application (step 45 of the
10 application), before exiting PIN entry mode in 59.

It will now be described the functioning of the system while referring to figure 4.

At the broadcast site, pay TV programs of a Specific Provider are stored.

15 The pay TV programs are encoded into a digital bitstream which is compressed and multiplexed with the signal of the PIN code field of the Specific Provider, including its logo and a menu to allow the viewer to have access to other movies of the
20 provider, to form a single bitstream.

This single bitstream is then broadcasted to all subscribers. At each customer's site, the bitstream is received by the decoder 25 where the audio and video are decompressed and the PIN code field is sent
25 to the customer's television set 26.

The request for the PIN code of the user is therefore prompted to the viewer.

The viewer then, for instance through a remote control apparatus, can enter his PIN code by pressing
30 keys.

At each pressing, a cross appears in the PIN entry field on the TV Screen.

Meanwhile the Security manager means 33 compares the PIN code with a preregistered user's PIN code entered before in the decoder for instance via a modem.

If the PIN codes matches, signals are sent to the application decoding process 30, and such decoding process is then authorised for displaying the application on the TV set.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore the present invention in its broader aspects is not limited to the specific details, representative devices and illustrated examples shown and described herein.

For instance, it also includes application to PIN code entry for obtaining specific services through mobile phone, for instance via GSM, or other specific services via Television and/or Internet.

CLAIMS

1. A system (10, S) for authenticating a PIN code of a user in an interactive information system in order to run an application (11),
5 wherein it comprises
- input means (15, 34, 35, 36, 37) for PIN code entry,
 - security manager means (13, 33) for comparing
10 the PIN code of the user upon a request for user authentication from the application, with a registered PIN code, and giving authorisation to run said application if the PIN code of the user matches with the registered PIN code, and
 - 15 - display means (17, 29, 38) for displaying any graphics including a PIN entry field, characterised in that
the request for user authentication being provided on the display means via the Pin entry field with the
20 look and feel of said application, the system further comprises emitting means (29, 38) for entering crypted digits in said PIN entry field upon entering the PIN code of the user in the security manager means through said input means,
 - 25 and the security manager means (13, 33) are arranged to give authorisation to run the application after full entry of said crypted digits and if the PIN code of the user is identical to the registered PIN code.
2. A system according to claim 1 characterised in
30 that the application is a television program.

3. A system according to claim 1, characterised in that the application is a service provided on mobile Telephone.

4. A method for authenticating a PIN code of a
5 user in an interactive information system, in order to run an application,
wherein said information system emits a request for authenticating a user (41),
said user enters a PIN code (43) through input means,
10 said PIN code of the user is compared (45) with a registered PIN code within security manager means,
and authorisation is provided to run said application if the PIN code of the user matches with the registered PIN code,
15 characterised in that
- the request for authenticating being provided with a PIN entry field having the look and feel of the application,
- crypted digits are entered (44) in said PIN entry
20 field, upon entering the PIN code by the user in the security manager means,
and authorisation to display the application is only provided (47) after full entry of said crypted digits, and if the PIN code of the user is identical
25 to the registered PIN code as checked by the security manager means.

5. A method according to claim 4, characterised in that, for presenting the request for authentication, the application undertakes the
30 following steps :

- presenting a PIN entry field to the user (41),
- asking the security manager means to enter a PIN Entry Mode (42),
- the input means comprising keys, checking if keys
5 are pressed by the user (43),
- while keys are pressed, giving feedback in entering said crypted digits in said PIN entry field (44), and,
- if the user is authenticated (45) by said security
10 manager means, giving said authorisation (47) to display (48) the application.

6. A method according to any of claims 4 and 5, characterised in that, for providing the authorisation to display the application the security
15 manager means undertakes the following steps :

- at the request of the application entering a PIN entry mode (50),
- initialising to empty a PIN repertory (51) and, the input means comprising keys, waiting for a key to
20 be pressed by the user (52),
- upon occurrence of pressing an « ending key », checking if a release occurs (53), checking the entered PIN against the user's PIN (56), and if success authorising the application to run.

25 7. A method according to any of claims 4 to 6, characterised in that the application is a Television program.

8. A method according to any of claims 4 to 6, characterised in that the application is a service
30 provided on a mobile telephone.

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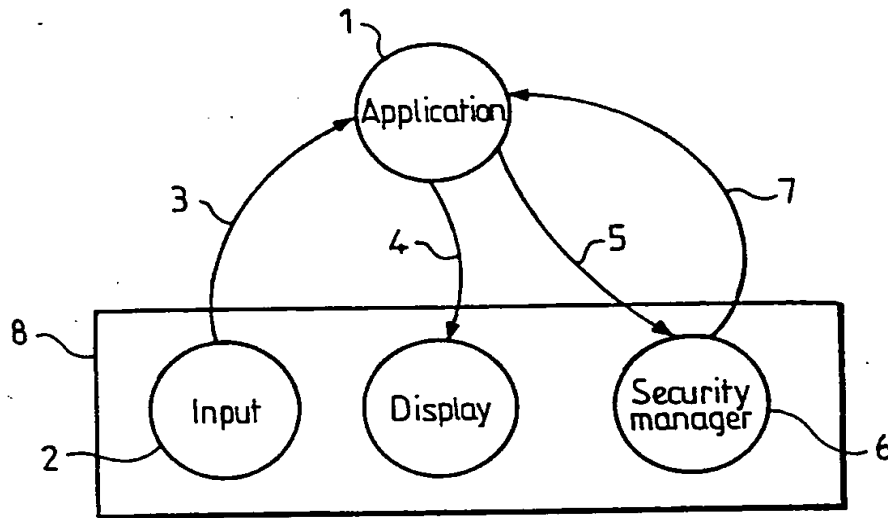


FIG. 1 PRIOR ART

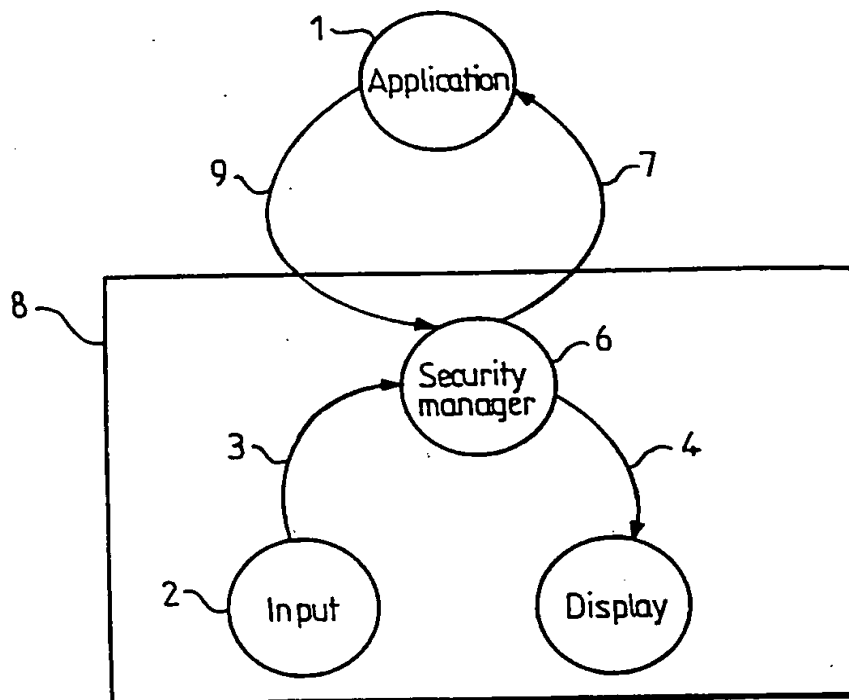


FIG. 2 PRIOR ART

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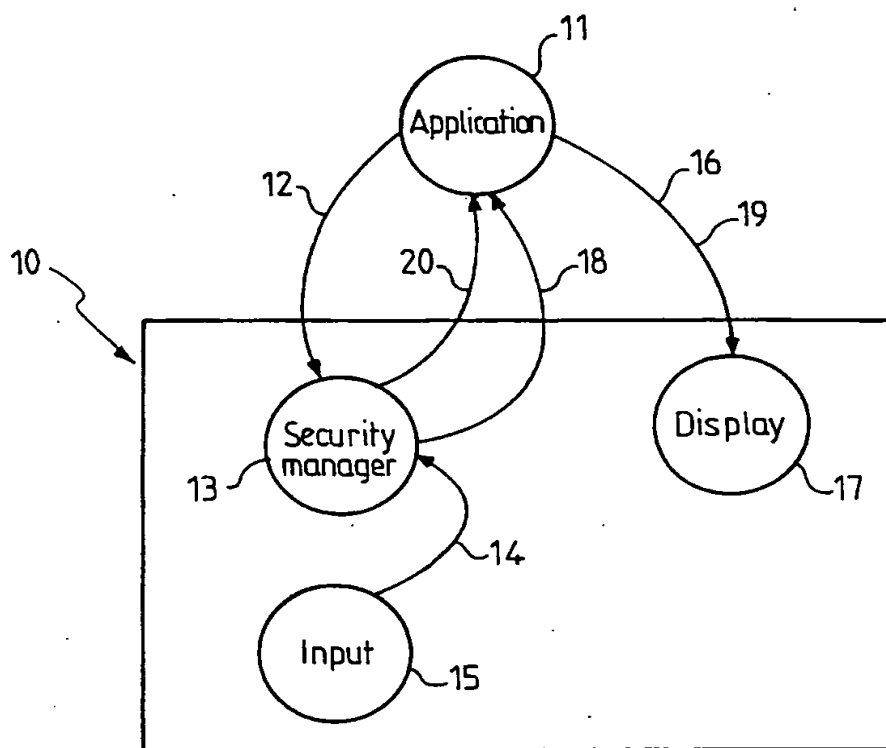


FIG. 3

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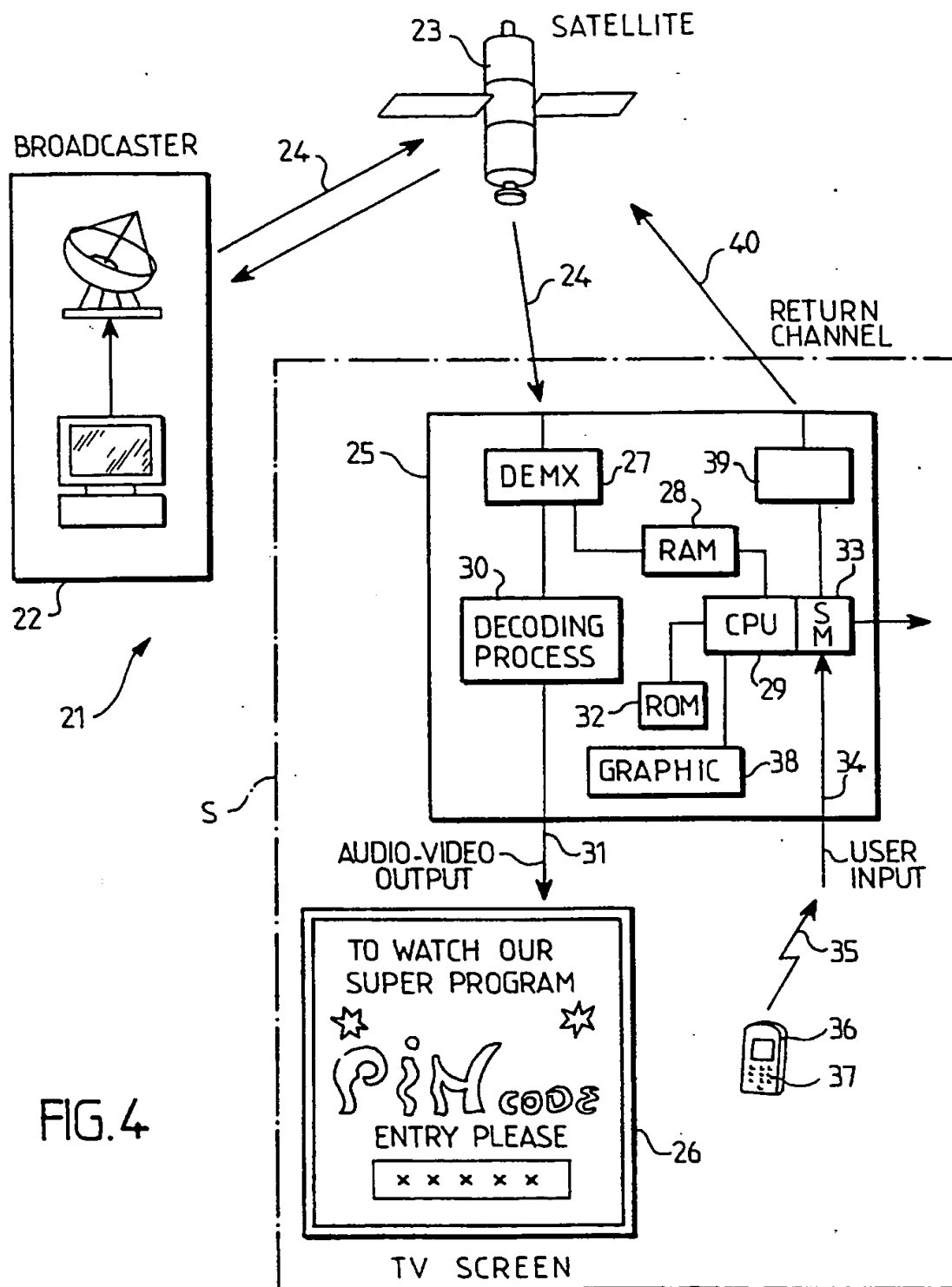


FIG. 4

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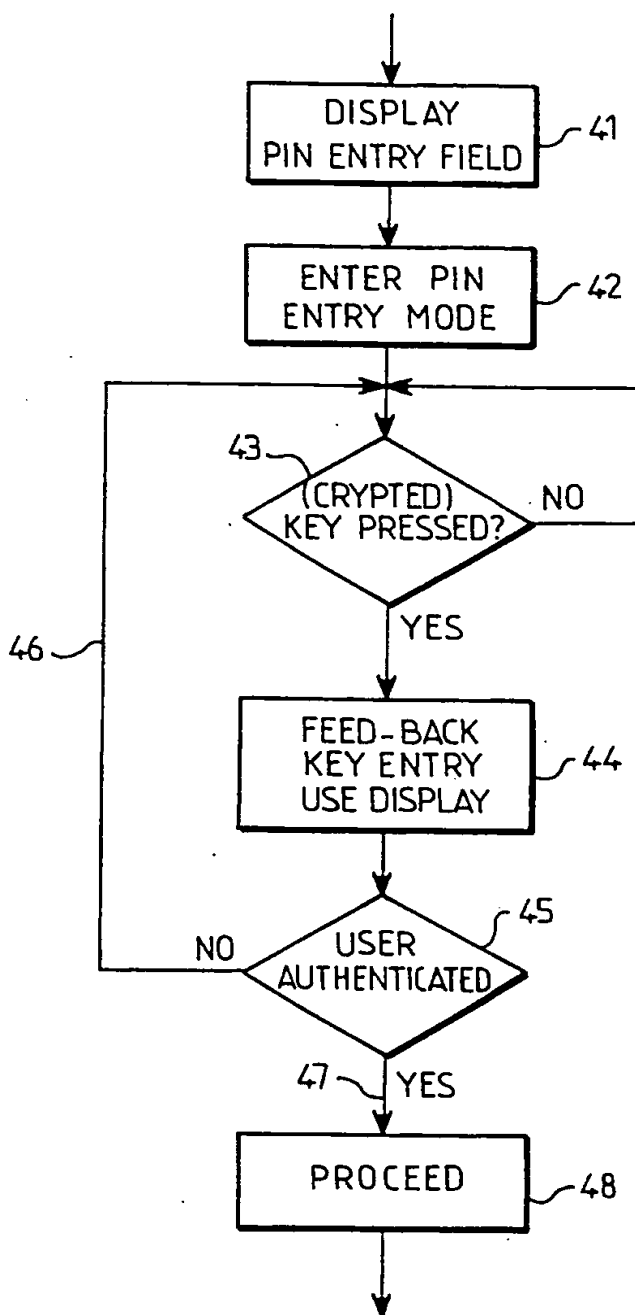


FIG.5

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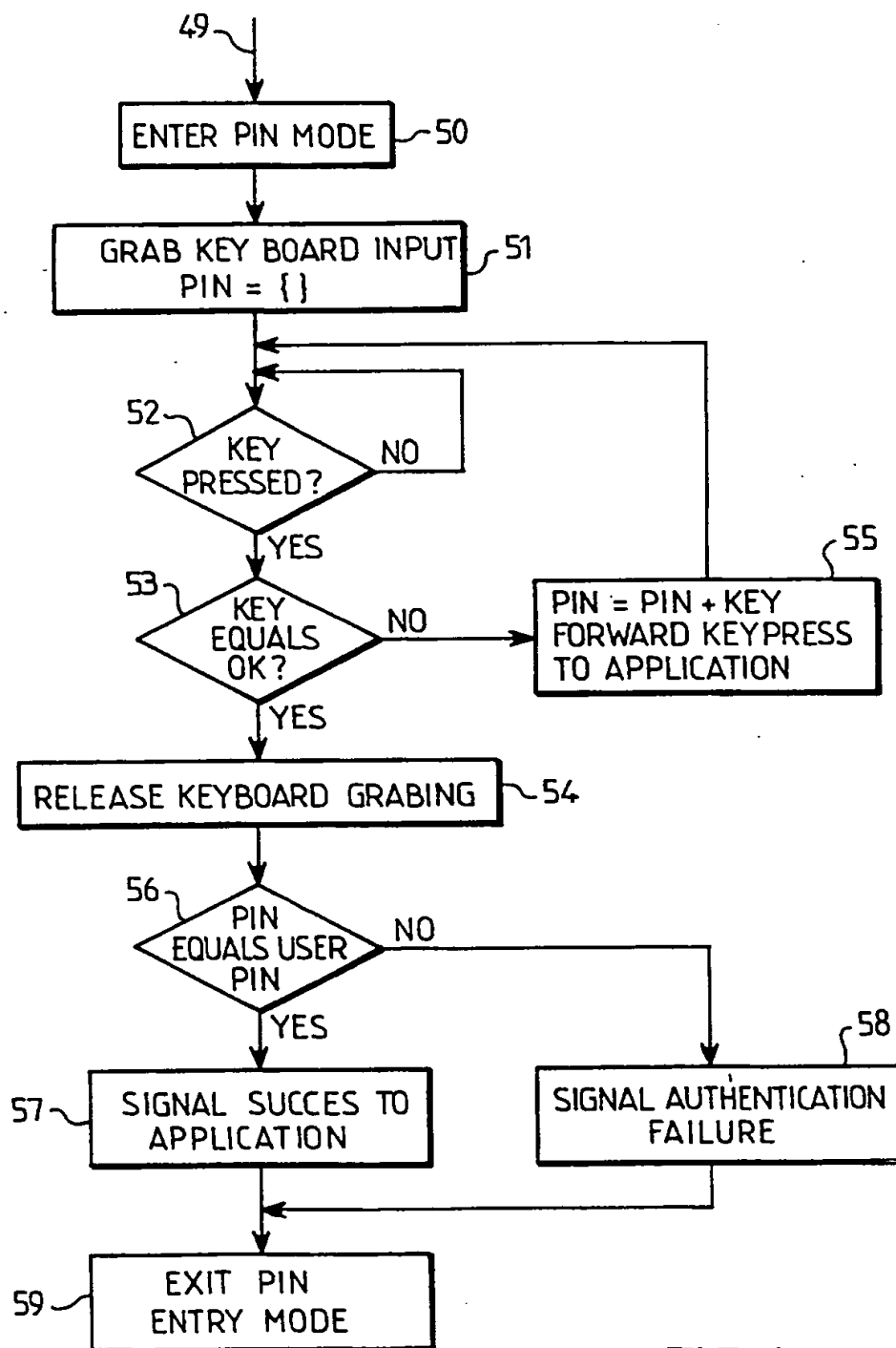


FIG. 6

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 99/01213

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Date of the actual completion of the international search

8 February 2000

Date of mailing of the international search report

15/02/2000

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

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Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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